

**PE - 08**

**MAPPING OF PROFESSIONAL, PEDAGOGICAL, SOCIAL, AND PERSONAL  
COMPETENCE OF SENIOR HIGH SCHOOL PHYSICS TEACHERS  
IN YOGYAKARTA SPECIAL REGION**

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**Summary**

The purpose of this study was to determine: (1) the competence map of senior high school physics teachers in three districts in the Special Province of Yogyakarta i.e Sleman, Bantul, Kulon Progo that reviewed based on the type of competence, (2) the competence map of senior high school physics teachers in the three districts reviewed based on district, (3) the competence difference among the senior high school physics teachers in the three districts, (4) the relationship between the tenure and their competence of senior high school physics teachers in the three districts, (5) the relationship between the salary space level and their competency of senior high school physics teachers in the three districts.

This study was a survey. The research object was professional, pedagogical, social, and personal competence. The population was senior high school physics teachers in Sleman, Bantul and Kulon Progo. Based on the data of UKG 2/2012 population size was 121 people. Sample size was determined based on the Harry King's nomogram obtained the results as many as 85 people, with details of Sleman 32, Bantul 30, and Kulon Progo 23 people. The research instrument was developed based on the Regulation of the National Education Minister of Indonesia Republic No.16 of 2007 on the Competence Standards and Academic Qualification of teacher, includes instruments to measure professional, pedagogical, social and personal competence. Validation the contents of the instrument was done by experts, and the instrument was stated valid. Reliability of the instrument was determined by correlating the competence of teachers which was assessed by principals and peers, and the instrument was stated reliable. Data analysis was performed by the classification based on the ideal mean score and standard deviation, as well as non-parametric analysis using the Kruskal-Wallis and Spearman test.

The results showed: (1) the competence level of physics teachers overall in the district of Sleman, Bantul and Kulon Progo stated in good categories, except for personal competence in the excellent category, (2) the level of professional competence of physics teachers in Bantul district was ranked highest followed by Sleman then Kulon Progo, the level of pedagogical competence of physics teachers in Sleman District was ranked highest followed by Kulon Progo then Bantul, the level of social competence of physics teachers in Sleman District was ranked highest followed by Bantul then Kulon Progo, the level of personal competence of physics teacher in Bantul district was ranked highest followed by Sleman then Kulon Progo, (3) there were significant differences of each level of teachers competence reviewed from their district, except for personal competence between Sleman-Bantul, and Sleman-Kulon Progo there was a significant difference, (4) there was no significant relationship between the tenure and professional, pedagogical, social, and personal competence of physics teachers in the three districts, (5) there was no significant relationship between the salary space level and professional, pedagogical, social, and personal competence of physics teachers in the three districts.

*Keywords: mapping, professional competence, pedagogical competence, social competence, personal competence*

**PEMETAAN KOMPETENSI PEDAGOGIK, PROFESIONAL,  
KEPRIBADIAN DAN SOSIAL GURU FISIKA SMA/MA  
DI DAERAH ISTIMEWA YOGYAKARTA**

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**Abstrak**

Tujuan penelitian ini adalah untuk mengetahui : (1) peta kompetensi guru fisika SMA/MA di tiga kabupaten di wilayah Daerah Istimewa Yogyakarta yakni Kabupaten Sleman, Bantul, dan Kulon Progo secara keseluruhan ditinjau berdasarkan jenis kompetensinya; (2) peta kompetensi guru fisika SMA/MA di tiga kabupaten tersebut ditinjau berdasarkan kabupatennya; (3) perbedaan antara kompetensi guru fisika SMA/MA di tiga kabupaten tersebut secara keseluruhan berdasarkan kabupatennya; (4) hubungan antara kompetensi guru fisika SMA/MA di tiga kabupaten tersebut secara keseluruhan dengan masa kerja; (5) hubungan antara kompetensi guru fisika SMA/MA di tiga kabupaten tersebut secara keseluruhan dengan golongan ruang gaji.

Penelitian ini merupakan penelitian survey. Obyek penelitian adalah kompetensi professional, pedagogik, sosial, dan kepribadian. Populasi penelitian adalah guru Fisika SMA/MA yang berunit kerja di Kabupaten Sleman, Bantul, dan Kulon Progo. Berdasarkan acuan data hasil UKG gelombang 2 th 2012 populasi sebanyak 121 orang. Besar sampel ditentukan berdasarkan Nomogram Harry King diperoleh hasil sebanyak 85 orang, dengan rincian Sleman 32, Bantul 30, dan Kulon Progo 23 orang. Instrumen penelitian dikembangkan berdasarkan Peraturan Menteri Pendidikan Nasional Republik Indonesia No.16 Tahun 2007 tentang Standar Kualifikasi Akademik dan Kompetensi Guru, meliputi instrument untuk mengukur kompetensi professional, pedagogik, sosial, dan kepribadian. Validasi isi instrumen dilakukan oleh ahli, dan instrumen dinyatakan valid. Reliabilitas instrumen dilakukan dengan cara mengkorelasikan penilaian kompetensi guru oleh kepala sekolah dan teman sejawat, dan instrument dinyatakan reliabel. Analisis data dilakukan dengan klasifikasi berdasarkan skor rerata ideal dan simpangan baku ideal, serta analisis non parametrik dengan uji beda Kruskal-Wallis dan uji korelasi Spearman.

Hasil penelitian menunjukkan : (1) tingkat kompetensi guru fisika di kabupaten Sleman, Bantul, dan Kulon Progo secara keseluruhan dalam kategori baik, kecuali kompetensi kepribadian dalam kategori sangat baik; (2) tingkat kompetensi professional guru fisika Kabupaten Bantul menduduki peringkat paling tinggi disusul Sleman kemudian Kulon Progo, tingkat kompetensi pedagogik guru fisika Kabupaten Sleman menduduki peringkat paling tinggi disusul Kulon Progo kemudian Bantul, tingkat kompetensi sosial guru fisika Kabupaten Sleman menduduki peringkat paling tinggi disusul Kulon Progo kemudian Bantul, tingkat kompetensi kepribadian guru fisika Kabupaten Bantul menduduki peringkat paling tinggi disusul Sleman kemudian Kulon Progo; (3) ada perbedaan yang signifikan masing-masing tingkat kompetensi ditinjau dari kabupatennya, kecuali kompetensi kepribadian antara Sleman-Bantul, dan Sleman-Kulon Progo tidak ada perbedaan yang signifikan; (4) tidak ada hubungan yang signifikan antara masa kerja guru fisika dengan kompetensi professional, pedagogik, sosial, dan kepribadian; (5) tidak ada hubungan yang signifikan antara golongan ruang gaji guru fisika dengan kompetensi professional, pedagogik, sosial, dan kepribadian.

Kata kunci : *pemetaan, kompetensi professional, kompetensi pedagogik, kompetensi sosial, kompetensi kepribadian*

## **A. Introduction**

Teachers are key elements in the education system , particularly at school . All other components , ranging from curriculum , infrastructure, costs, etc. will not mean much if the essence of learning is the teacher interactions with students are not qualified . Once the importance of the teacher's role in transforming the educational inputs , to the point that many experts claim that in the school there will be no change or an increase in quality without change and improving the quality of teachers . ( Ditjen PMTK , 2008) .

Competency standards of teachers developed as a whole of four main competences , namely pedagogic competence , personal competence , social and professional ( Ditjen PMTK , 2008) . Law No. 14 of 2005 states that the position of teachers as professionals, serves to enhance the dignity of teachers as well as its role as a learning agent to improve the quality of national education ( Purwana, 2007) .

Teachers are required to have academic qualifications , competence , teaching certificate , physical and spiritual health as well as have the ability to achieve national education goals ( UU No.14 Th 2005 pasal 14) . Teacher competence referred to in article eight includes pedagogical competence , personal competence , social competence and professional competence acquired through professional education ( UU No.14 Th 2005 pasal 10 ) .

Physics is one of the basic sciences which became the foundation of individual thinking pattern to be developed into a major supporter in solving problems, especially in the practical application of science ( Sunaryo , 2011) . By looking at the specificity of physics field, physics teacher should be able to provide an understanding of the concepts in addition to learning in the classroom . But it is also able to provide an understanding of the application of physics concepts in everyday life in the resolution of concrete problems .

The results of the pre-survey of Yogyakarta Provincial Education Department shows that :

1. The mean of physics score in National Examination of Senior High School in the Special Region of Yogyakarta in the school year 2011/2012 has the lowest ranking among the other subjects in natural sciences majors .
2. The failure among participants in National Examination of Senior High School in the Special Region of Yogyakarta in the school year 2011/2012 mainly was caused by the failure in physics subject.
3. Written Competency Test conducted by government has not been able to demonstrate suitability with the performance of teachers in the school .

Related to these results , it is necessary to research on competency mapping of physics teachers in Yogyakarta. The issues related to the competence of teachers are very numerous and complex. Because of various limitations of the researcher, the issues examined in this study only includes :

1. How physics teachers competency maps in three districts ( Sleman , Bantul , Kulon Progo ) as a whole which are reviewed on the basis of their competencies ?
  2. How physics teachers competency maps in the three districts which are reviewed on the basis of their district ?
  3. Are there differences among physics teachers competency in the three districts as a whole which are reviewed on the basis of their district ?
  4. Are there relationships between tenure and competency of physics teachers in the three districts as a whole ?
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5. Are there relationships between salary space and competency of physics teachers in the three districts as a whole ?

Competency test of senior high school physics teachers in Special Region of Yogyakarta that has been done is the part of a physics teacher competency evaluation after certification . The test that have been conducted only in the form of a written test and involved only professional and pedagogic competency, thus not fully describe the whole competency assessment . This research was conducted in order to complete the test results so that can describe the whole competencies of teachers in the field .

## B. Method

This study is a survey on physics teachers of public and private senior high school in Yogyakarta special region after certification of teachers. Researchers do not provide treatment of research subjects, but only seeks to uncover what data there are. The data are then mapped on the basis of competence ( professional , pedagogical, social, and personality ) for the entire region , and then mapped to each district . The study also sought to uncover the relationships between the competencies with tenure and the class of salary space. The study was conducted in the area of Yogyakarta special region , but due to various limitations, the study is limited to three districts in Yogyakarta i.e Sleman, Bantul and Kulon Progo districts .

The population of the study are senior high school physics teachers who work in Yogyakarta special region. More specifically the study used a sample of physics teachers in public and private senior high school who work in three districts i.e Sleman, Bantul and Kulon Progo. From each district are chosen physics teachers based on reference data from the second wave competency test of the year 2012. Meanwhile a large of population based on the reference as much as 121 teachers, the details of which are presented in table 3.1 . After that, using the nomogram Harry King for an error rate of 0.05 or 5 % then 70 % samples can be obtained from the population i.e as much as 84.7 or rounded to 85 teachers . Furthermore, using the technique of random sampling area, the distribution of samples in each district can be seen also in table 1 .

Table 1 . Population and sample of the research

No.	District	Population	Sample
1	Sleman	52	32
2	Bantul	41	30
3	Kulon Progo	28	23
<b>Total</b>		<b>121</b>	<b>85</b>

Data collection was performed by non-test techniques . They are a questionnaire, which is required for filling the questionnaire observation, interviews, and examination of documents. Collecting data in this study is used to explore and find out the pedagogical, professional, personal and social Physics teacher.

Data collection was performed by non-test techniques using questionnaire. It is required observation, interviews, and examination of documents in filling the questionnaire. The purpose of Collecting data in this study are to explore and find out the pedagogical competency , professional competency, personal competency and social competency of physics teachers .

Instruments used to collect information regarding these competencies are adapted from the instruments on the Regulation of the Minister of National Education of the Republic of Indonesia No.16 in the year of 2007 about the Standards of Academic Qualifications and Competency. The validity of the instruments used is content validity. In this case instrument is declared to be valid, if the instrument can measure what should be measured . To determine the content validity is performed by arranging the lattices of instrument based on theory developed from the study. The instrument which has been developed is then reviewed by experts. To obtain a high reliability of the questionnaire was done by the interview about data, documents, and observations during prasurey stage. The study about documents of the teachers focused on teacher administration (lesson plan). Reliability of the instrument was obtained by correlating the data from headmaster and peer teacher. Because the data are ordinal, then the correlation is done with non- parametric test of Spearman. The result is obtained  $r = 0.457$  ( sig. 0.028 ) for professional competency,  $r = 0.412$  ( sig. 0.024 ) for pedagogical competency,  $r = 0.401$  ( sig. 0.028 ) for social competency, and  $r = 0.465$  ( sig. 0.010 ) for personal competency .

The data analysis technique used is using quantitative descriptive analysis. Quantitative data analysis was done by using descriptive statistical analysis of the data used to describe the data as it is collected. The results of the analysis in the form of data presentation in the form of tables and graphs . The results of this analysis were then compared with a predetermined assessment criteria based on the ideal mean scores and the ideal standard deviation scores that be achieved from the instrument. Tabulation of data for each component which has been carried out on the score obtained. Then, by using the SPSS 16.0 program obtained a mean value, maximum value, minimum value for each component of the study.

In connection with research data, an overview of data dissemination can be obtained from the list of tables grouped frequency distribution data. From the data collected in the study then analyzed with descriptive analysis techniques quantitative evaluation that describe and interpret each component compared with the reference criteria based on the ideal mean scores (  $M_i$  ) and the ideal standard deviation scores (  $SD_i$  ) which achieved by instruments . This study used a questionnaire scale of five ( with the conversion and the score values, such as table 2 .

Table 2 . Conversion score to scale score five

No.	Score	Criteria
<b>1</b>	$x > (M_i + 1.8 SD_i)$	very good
<b>2</b>	$M_i + 0.6 SD_i < x \leq (M_i + 1.8 SD_i)$	good
<b>3</b>	$M - 0.6 SD_i < x \leq (M_i + 0.6 SD_i)$	fair/medium
<b>4</b>	$M - 1.8 SD_i < x \leq (M_i - 0.6 SD_i)$	less
<b>5</b>	$x \leq (M_i + 1.8 SD_i)$	very less

Determination of 1.8 SBI for category is meant that the categories distance is not too small so makes too big categories, and not too big so makes the category of too little .  $M_i$  is the ideal mean which can be achieved from instrument =  $1/2$  (ideal maximum score +ideal minimum score) . While the  $SD_i$  is the ideal standard deviation which can be achieved from instrument =  $1/6$  (ideal maximum score +ideal minimum score). The ideal maximum score is the highest score that may be obtained by the subject from the whole items of the instrument . The ideal minimum score is the lowest score obtained the subject from the whole items of the instrument .

Furthermore, because the data competence is the ordinal data then data analysis using non- parametric analysis . To analyse the difference first using Kruskal Wallis test then

followed by Mann-Whitney test for post-hoc analysis. To analyse the relationship using correlation test of Spearman.

**C. Results**

**1. The Competency Map of Physics Teachers in Three Districts as a Whole**

The result of the assessment carried out by the principal and teacher colleagues, is presented in table 3, while its graph on the figure 1.

Table 3. The Competency of Physics Teacher Competence in Three Districts as a Whole

Competency	Minimum	Mean	Ideal Mean	Maximum	Category
Professional	15	58	45	75	Good
Pedagogical	25	92	75	125	Good
Social	25	97	75	125	Good
Persoal	25	109	75	125	very good

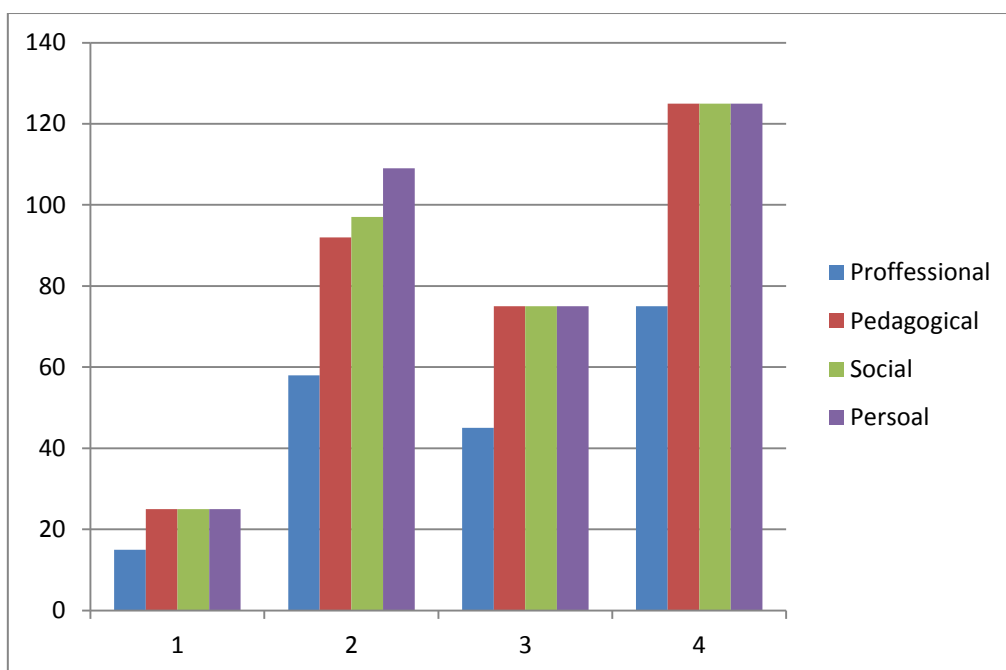


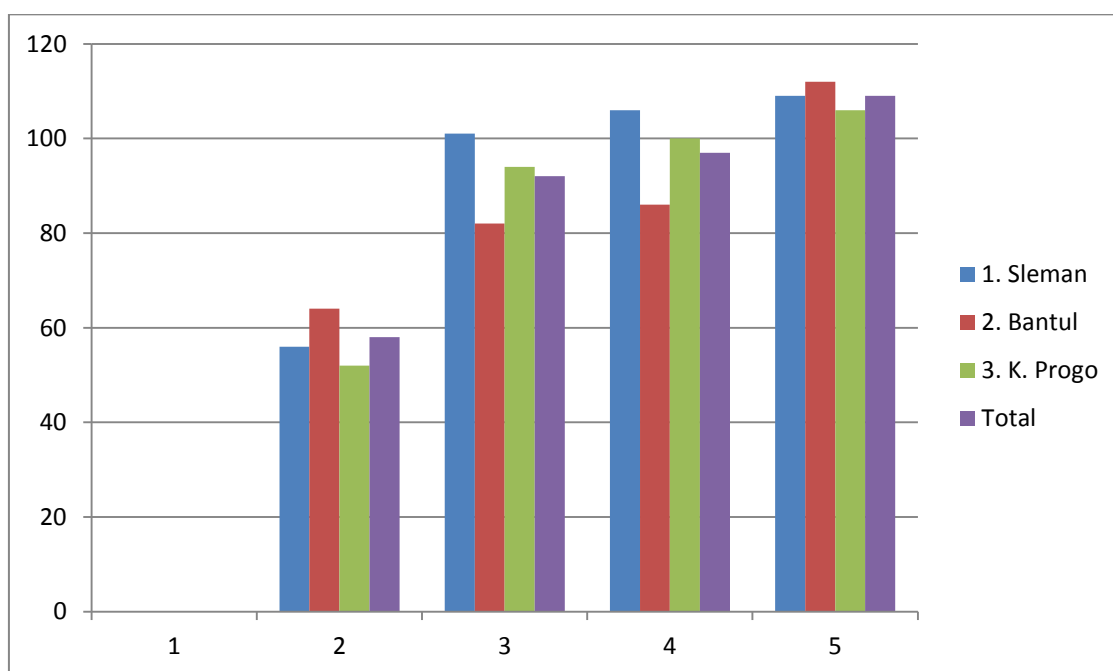
Figure 1. The graph of competency of physics teachers in three district as a whole

**2. Competency Map of Physics Teachers in Each District**

The competency map of physics teacher in each district (3 districts) in Yogyakarta Special Region is presented in table 4, whereas its graph is presented in figure 2.

Table 4. The competency map of physics teacher in each district

District		Professional Competency	Pedagogical Competency	Social Competency	Personal Competency
1. Sleman	Mean	56	101	106	109
	Category	good	good	very good	very good
2. Bantul	Mean	64	82	86	112
	Category	very good	medium	good	very good
3. K. Progo	Mean	52	94	100	106
	Category	good	good	good	very good
Total	Mean	58	92	97	109
	Category	good	good	good	very good



Gambar 2. Grafik Tingkat Kompetensi Tiap Kabupaten

It seems from the table that for professional competency, Bantul was ranked highest followed by Sleman, and then Kulon Progo the lowest. For pedagogical, Sleman was ranked highest, followed by Kulon Progo, and then Bantul the lowest. For social competency, Sleman was ranked highest, followed by Kulon Progo and then Bantul the lowest. Last for personal competency, Bantul was ranked highest followed by Sleman, and then Kulon Progo the lowest.

### 3. Competency Differences among the District

Analysis results of competency differences of physics teachers among the three districts using non-parametric Kruskal Wallis test are presented in table 5.

Table 5. Kruskal Wallis Test Result  
Test Statistics<sup>a,b</sup>

Statistics	Professional competency	Pedagogical Competency	Social Competency	Personal Competency
Chi-Square	42.964	56.697	47.818	7.332
df	2	2	2	2
Asymp. Sig.	.000	.000	.000	.026

a. Kruskal Wallis Test

b. Grouping Variable: subject's district

It appears from table 5 there is a significant difference of each level of competency which is reviewed on the basis of the district ( $\text{sig} < 0.05$ ).

Pos- hoc testing performed using the Mann-Whitney test. The result can be seen in table 6. It appears from the table that for personal competency, pedagogical competency, and social competency were no significant differences between the districts of Sleman and Bantul, Sleman and Kulon Progo, Bantul and Kulon Progo ( $\text{sig} > 0.05$ ). As for personal competence there are no significant difference between Sleman and Bantul, Sleman and Kulon Progo ( $\text{sig} > 0.05$ ); however, there are significant differences between Bantul and Kulon Progo ( $\text{sig} > 0.05$ ).

Table 6. The result of post-hoc test using Mann-Whitney

Test Statistics<sup>a,b</sup>

District	Professional Competency		Pedagogical Competency		Social Competency		Personal Competency	
	Z	Sig	Z	Sig	Z	Sig	Z	Sig
Sleman-Bantul	-5.005	.000	-6.705	.000	-6.342	.000	-1.497	.135
Sleman- Kulon Progo	-3.001	.003	-3.649	.000	-2.102	.036	-1.743	.081
Bantul-Kulon Progo	-5.601	.000	-5.168	.000	-5.029	.000	-2.462	.014

a. Kruskal Mann-Whitney

b. Grouping Variable: subject's district

#### 4. Relationship between Tenure and Teacher Competency

Test results of the correlation between tenure and competency of physics teachers which is done using the non-parametric Spearman's test are presented in table 7.

Table 7. Correlation between Tenure and Teacher Competency

Competency	Tenure	
	Correlation ( r )	sig
Professional	-.172	.130
Pedagogical	.048	.672
Social	.056	.626
Personal	-.114	.318



It appears from the table that there is no significant relationship between tenure and professional competency ( $r = -0.172$ ;  $sig = .130$ ), pedagogical competency ( $r = 0.048$ ;  $sig = 0.672$ ), social competency ( $r = 0.056$ ;  $sig = 0.626$ ), and personal competency ( $r = -0.114$ ;  $sig = 0.318$ ).

### 5. Relationship between the Class of Salary Space and Teacher Competency

Results of the test of correlation between tenure and competency of teachers which is done using the non-parametric Spearman's test are presented in Table 8.

Table 8. Correlation between the class of salary and Teacher Competency

Competency	The class of salary space	
	Correlation ( r )	sig
Professional	-.060	.616
Pedagogical	.184	.122
Social	.215	.070
Personal	.032	.787

It appears from the table that there is no relationship between the class of salary space and professional competency ( $r = -0.060$ ;  $sig = 0.616$ ), pedagogical competency ( $r = 0.184$ ;  $sig = 0.122$ ), social competency ( $r = 0.215$ ;  $sig = .070$ ), and personal competency ( $r = -0.032$ ;  $sig = 0.787$ ).

### D. Discussion

From the data of the overall competency of physics teachers in three areas ( Sleman , Bantul and Kulon Progo ) , all in good category , except for personal competence in the excellent category . This means that professional competency , pedagogical competency, and social competency can still be improved, while the personal competency in order to be maintained .

From the maps based on the basis of district which show that the professional competency of teachers in Bantul district was ranked highest , followed by Sleman , and Kulon Progo the lowest , then it means that if there are training opportunities related to professional competency, should prioritize Kulon Progo , then Sleman , and Bantul the last .

Instead for pedagogical competency, Sleman is on the top ranking, followed by Progo, and Bantul the last , then if there are training opportunities related to the pedagogical competency it should give priority to Bantul , followed by Kulon Progo , and Sleman the last.

For social competency , because Sleman district ranked highest followed by Kulon Progo , and Bantul the last , so if there are training opportunities related to social competency , should prioritize to Bantul , after that Kulon Progo , and Sleman the last .

For personal competence , therefore Bantul ranked highest followed by Sleman , and Kulon Progo the last , so if there are training opportunities related to personal competency , logically should prioritize Kulon Progo , then Sleman , and Bantul the last .

From the analysis of the relationship between tenure of teacher and their competency , the result show no significant relationship . It is logical that during the tenure of teachers do not want to improve themselves . Similarly, from the results that there is no significant relationship between the class of salary space and competency , shows that high class does not guarantee a high competency . It could be that the increase in class of the salary space are still not competency based , but just based on the number of teaching hours .

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## **E. Conclusions and Recommendations**

### **1 . Conclusions**

Based on the analysis and discussion that has been stated in advance , it can be deduced as follows.

1. The competency of physics teachers in three district of Sleman, Bantul and Kulon Progo as a whole are in good categories, except for personal competence in the excellent category.
2.
  - a. Professional competency of physics teachers at Bantul occupy the highest ranking followed by Sleman, and Kulon Progo the last.
  - b . Pedagogical competency of physics teachers at Sleman district occupy the highest ranking, followed by Kulon Progo, and Bantul the last .
  - c . Social competency of physics teachers at Sleman district occupy the highest ranking, followed by Kulon Progo, and Bantul the last.
  - d . Personal competency of physics teachers at Bantul occupy the highest ranking followed by Sleman , and Kulon Progo the last .
3. There are significant differences of each competency which is reviewed by the district, except personal competence between Sleman - Bantul , Kulon Progo and Sleman no significant difference .
4. There is no significant relationship between tenure of physics teachers and professional competency , pedagogical competency , social competency , and personal competency .
5. There is no siognificant relationship between the class of salary space of physics teachers and professional competency , pedagogical competency , social competency, and personal competency .

### **2. Rekomendations**

From the above conclusions, it can be delivered the following suggestions.

1. Competence of physics teachers at Sleman, Bantul, and Kulon Progo still needs to be improved, except personal competency should be maintained
  2. If there are opportunities for government to conduct a training related to professional competency, it should prioritize Kulon Progo district, followed by Sleman, and Bantul the last.
  3. If there are opportunities for government to conduct a training related to pedagogical competency, it should prioritize Bantul district, followed by Kulon Progo, and Sleman the last.
  4. If there are opportunities for government to conduct a training related to social competency, it should prioritize Kulon Progo district, followed by Sleman, and Bantul the last.
  5. If there are opportunities for government to conduct a training related to personal competency, it should prioritize Kulon Progo district, followed by Sleman, and Bantul the last.
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